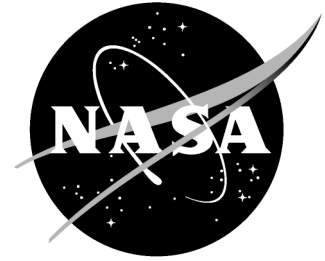


# NewsRelease

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October 18, 2001

RELEASE NO. 01-104

## **NASA's 2001 Mars Odyssey spacecraft arrives at Mars next week**

After 200 days of travel and more than 460 million kilometers (about 285 million miles) logged on its odometer, NASA's 2001 Mars Odyssey spacecraft will fire its main engine for the first and only time next week and put itself into orbit around the red planet.

Launched April 7 from Cape Canaveral Air Force Station, Fla., Odyssey is NASA's first mission to Mars since the loss of two spacecraft in 1999. Other than our Moon, Mars has attracted more spacecraft exploration attempts than any other object in the solar system, and no other planet has proved as daunting to success. Of the 30 missions sent to Mars by three countries over 40 years, less than one-third have been successful.

"The spacecraft, ground system and flight team are ready for Mars orbit insertion," said Matthew Landano, Odyssey project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "We uplinked the sequence of commands that control the orbit insertion on Oct. 15. Now we will closely monitor the spacecraft's progress as it approaches Mars and executes the orbit insertion burn."

To enter orbit, Odyssey's propellant tanks, the size of big beachballs, must first be pressurized, plumbing lines heated, and the system primed before 262.8 kilograms (579.4 pounds) of propellant is burned in exactly the right direction for 19.7 minutes.

Flight controllers at JPL will see the main engine burn begin a few seconds after 10:26 p.m. Eastern time on the evening of Oct. 23. (Events in space are usually measured in Universal Time -- formerly called Greenwich Mean Time -- under which the Mars arrival occurs on Oct. 24. In the United States, however, the arrival will take place the evening of Oct. 23.)

The spacecraft will pass behind the planet 10 minutes later and will be out of contact for about 20 minutes. The burn is expected to end at 10:46 p.m. Eastern time, but controllers will not receive confirmation until a few minutes later when the spacecraft comes out from behind Mars and reestablishes contact with Earth at about 11 p.m.

The firing of the main engine will brake the spacecraft's speed, slowing and curving its trajectory into an egg-shaped orbit around the planet. In the weeks and months ahead, the spacecraft will repeatedly brush against the top of the atmosphere in a process called aerobraking to reduce the long, 19-hour elliptical orbit into a shorter, 2-hour circular orbit of approximately 400 kilometers (about 250 miles) altitude desired for the mission's science data collection.

Researchers at NASA Langley will be supporting JPL during the 70-day aerobraking phase of the mission. Langley's job will be to perform aerobraking flight simulations to help define the rate at which the vehicle goes from the initial elliptical orbit to the 2-hour circular science orbit; to predict what the atmospheric density will be for each pass; to monitor the aerodynamics of the spacecraft as it passes through the thin atmosphere of Mars; and to predict how hot the spacecraft gets as it dips into the atmosphere.

NASA's latest explorer carries several scientific instruments to map the chemical and mineralogical makeup of Mars: a thermal-emission imaging system, a gamma ray spectrometer that includes a neutron spectrometer and a high-energy neutron detector, and a Martian radiation environment experiment.

The 2001 Mars Odyssey mission arrival press kit is available online at:  
<http://www.jpl.nasa.gov/presskits/odysseyarrival.pdf>.

JPL manages the 2001 Mars Odyssey mission for NASA's Office of Space Science, Washington, D.C. Principal investigators at Arizona State University in Tempe, the University of Arizona in Tucson, and NASA's Johnson Space Center, Houston, Texas, operate the science instruments. Lockheed Martin Astronautics, Denver, Colo., is the prime contractor for the project, and developed and built the orbiter. Mission operations are conducted jointly from Lockheed Martin and from JPL, a division of the California Institute of Technology in Pasadena. NASA's Langley Research Center in Hampton, Va., will provide aerobraking support to JPL's navigation team during mission operations.

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